MINNESOTA WEST COMMUNITY & TECHNICAL COLLEGE
COURSE OUTLINE

Faculty are required to have the outline submitted to the Academic Affairs Office. The course outline is the form used for approval of new courses by the Collegewide Curriculum Committee.

COURSE TITLE: Electrical Circuits Fundamentals                COURSE NUMBER: ELCO 1100

COURSE DESCRIPTION:
The course covers the basic concepts of electricity. Included in the course will be a brief overview of electricity and electronics, a study of resistors, Ohm's law, series and parallel circuits, voltage and current dividers, DC meters, Kirchoff's laws and network theorems, conductors and insulators, batteries, magnetism and magnetic units, electromagnetic induction, alternating voltage and current, capacitance, capacitive reactance, capacitive circuits, inductance, inductive reactance, inductive circuits, RC and L/R time constants, AC circuits, complex numbers, resonance, and filters.
(Concurrent course ELCO 1105)
3 Credits (3 lect/pres, 0 lab, 0 other)

COURSE GOALS:
The following list of course goals will be addressed in the course. These goals are directly related to the performance objectives. (*designates a CRUCIAL goal)

1. exhibit dependability
2. identify electrical symbols
3. define real power
4. differentiate conductors/insulator
5. define apparent power
6. define volts/amps/ohms
7. define reactive power
8. apply Ohms Law
9. calculate power factor
10. describe phase angle
11. compute conductor resistance
12. describe polyphase circuits
13. describe series circuits
14. determine polyphase voltage/current relationships
15. describe voltmeter operation
16. describe delta connections
17. describe wye connections
18. describe parallel circuits
19. describe series parallel circuits
20. describe unbalanced wye system
21. describe unbalanced delta system
22. calculate polyphase power
23. calculate polyphase apparent power
24. calculate polyphase vars
25. describe polyphase power measurement
26. calculate polyphase power factor
27. describe Nortons theorem
28. apply Nortons theorem
29. describe power equation
30. describe magnetic poles
31. define permeability
32. identify AC sources
33. describe electromagnetic induction principles
34. apply electromagnetic induction principles
35. describe average/effective values
36. describe inductance
37. describe AC inductive circuits
38. define capacitance
39. describe RC circuits
40. describe RL circuits
41. describe RLC circuits
42. calculate series resonance
43. apply series resonance
44. calculate parallel resonance
45. apply parallel resonance
46. describe source impedance
47. describe AC resistive power
48. calculate AC resistive power
49. describe series reactive power
50. calculate series reactive power
51. calculate parallel reactive power

ATTENDANCE:
Students will be required to attend a minimum of 95% to satisfactorily complete this course.

The information in this course outline is subject to revision

Veteran Services: Minnesota West is dedicated to assisting veterans and eligible family members in achieving their educational goals efficiently. Active duty and reserve/guard military members should advise their instructor of all regularly scheduled military appointments and duties that conflict with scheduled course requirements. Instructors will make every effort to work with the student to identify adjusted timelines. If you are a veteran, please contact the Minnesota West Veterans Service Office.

To receive reasonable accommodations for a documented disability, please contact the campus Student Services Advisor or campus Disability Coordinator as arrangements must be made in advance. In addition, students are encouraged to notify their instructor.

This document is available in alternative formats to individuals with disabilities by contacting the Student Services Advisor or by calling 800-658-2330 or Minnesota Relay Service at 800-627-3529 or by using your preferred relay service.

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